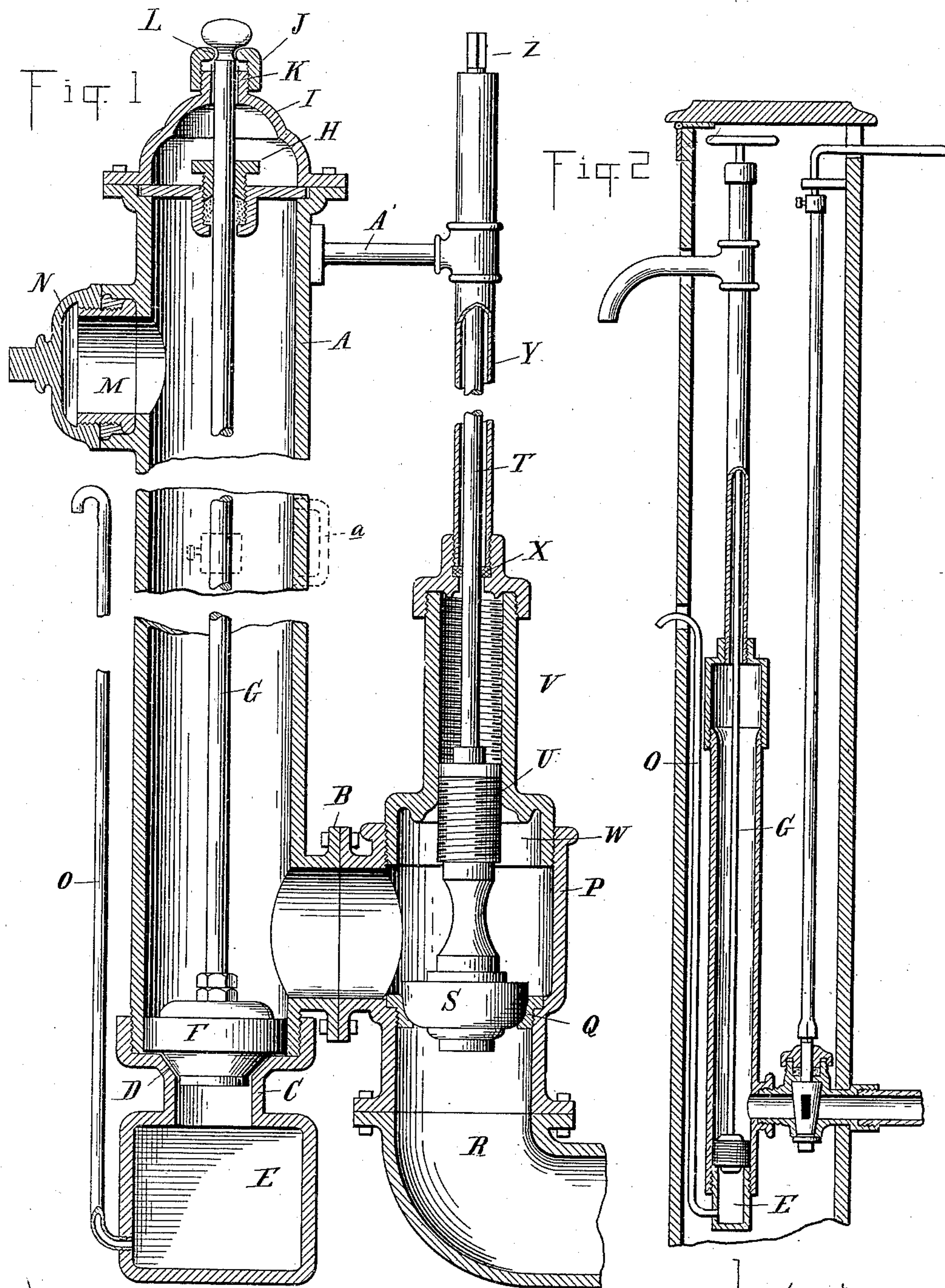


(No Model.)

J. F. LINGEMANN.
HYDRANT.

No. 426,457.

Patented Apr. 29, 1890.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN F. LINGEMANN, OF DETROIT, MICHIGAN.

HYDRANT.

SPECIFICATION forming part of Letters Patent No. 426,457, dated April 29, 1890.

Application filed January 17, 1890. Serial No. 337,277. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. LINGEMANN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Hydrants, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in hydrants; and my invention is designed to apply to either fire-hydrants or to such hydrants as are used for domestic purposes.

My invention consists, primarily, in the novel means for expelling the water from the hydrant case or passages after the water is shut off to prevent all possibility of its freezing up in cold weather.

My invention consists, further, in the construction and arrangement of different parts, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a vertical central section of a fire-hydrant embodying my invention, and Fig. 2 is a similar section showing my invention applied to an ordinary hydrant as used for domestic purposes.

A is the casing of the hydrant, which is of any of the known forms, except that it is cylindrical from top to bottom or at the lower end only corresponding to a cylinder of a pump.

B is a branch coupling, formed near the lower end of the casing.

C is a base-section, secured by screw-threads or flanges to the lower end of the casing.

D is a valve-seat, formed on the upper end of the foot-section.

E is a well incased by the foot-section.

F is a piston, constructed to fit the bore of the valve-casing and adapted to be seated on the seat D.

G is a piston-rod attached thereto.

H is a stuffing-box, through which the piston-rod passes.

I is the cap of the casing, removably secured and adapted to hold the stuffing-box in place in the hydrant.

J is a nut, screw-threaded onto a nipple K on top of the casing and loosely engaging into

an angular notch L on the top of the piston-rod.

M is the discharge-nozzle of the hydrant, and N is the detachable plug of the discharge-nozzle.

Into the bottom of the well E a discharge-pipe O is connected and leads to any desired distance above the ground outside the casing. To the coupling B of the hydrant-case is connected the valve-casing P, which forms a lateral extension from the hydrant-casing and contains upon its lower side a valve-seat Q, through which the valve-casing communicates with the supply pipe or main R in the usual manner.

The valve S is adapted to be seated upon the seat Q and forms the shut-off valve of the hydrant. It is secured to a vertical valve-stem T, upon which is secured the screw-plug U, which engages into the screw-threaded barrel V. This barrel V is of sufficient length to permit the raising of the valve S entirely out of the way into a corresponding recess W on top of the valve-casing, where it is adapted to form a backing to prevent the water from forcing its way into the barrel V. The top of the valve-stem passes through a suitable stuffing-box X and through a suitable pipe or hollow standard Y to a distance slightly above the top of the hydrant-casing, where it terminates into a wrench-hold Z.

One or more braces A', secured to the hydrant-case, are arranged to hold the standard Y in its relative position.

The parts being thus constructed and arranged, it will be seen that by applying a wrench to the upper end of the valve-stem the valve S may be raised from the valve-seat, and the water thereby turned on.

By drawing the valve S completely to the top into the recess provided therefor it is entirely out of the way of the inflowing water, which therefore is delivered with its full force into the hydrant. At the same time the valve forms a packing to prevent the water from being forced up through and into the barrel V. The water is thus admitted into the hydrant-casing, and will be discharged through the discharge-opening M into the hose-coupling in the usual manner.

To shut off the water, by a reverse opera-

tion the valve S is screwed down to its seat, and then the screw-threaded nut J is turned by means of a wrench applied thereto, as in the act of unscrewing. This lifts the piston-rod G, and thereby the piston-valve F, off its seat, and after the screw-nut is entirely unscrewed the operator is free to move the piston-rod up as far as he can, as the casing is filled with water. This operation, it will be seen, causes a portion of the water contained in the casing to flow out through the discharge-nozzle. By a return movement of the piston the air which has been admitted at the same time, either through the discharge-pipe O or through the nozzle M, is compressed, and its pressure in the further downward movement of the piston-valve forcibly ejects the water, which after the lifting process has still remained in the bottom of the valve-casing through the pipe O, where it will flow off. By repeating the same operation every drop of water from the casing may thus be expelled, and the completeness of the operation will readily appear by the action of the vent-pipe O in expelling nothing but air.

I preferably provide the well E in the bottom of the casing large enough to contain all the water which remains in the valve-casing after the piston is raised, so that a single operation of the piston is generally enough to clear all the remaining water in said well, and expel it by the downward pressure of the piston-valve. This, however, is not necessary, as a smaller well or the absence of the well would not interfere with the operation of the device.

In applying my invention to ordinary hydrants as used for domestic purposes, of course it is sufficient to make the valve-case of suitable-sized piping without the mechanical means, such as a nut J, before described.

To start the piston-valve from its seat—an operation which may be necessary in larger hydrants, but which in small hydrants may be dispensed with—the piston may be raised by means of a suitable handle applied to the upper end of the piston-valve stem.

When it is considered that great damage is annually done to hydrants by their freezing up and the injury resulting therefrom in case of fire, the importance of my invention will be readily appreciated, as it affords an absolute means to free the hydrant-case and the piston connected therewith of all water remaining after the use.

It is obvious that it is not necessary to make the casing of the hydrant of the same inside diameter throughout its whole height, as the device will operate just as well if only the lower portion of the casing can be utilized as a pump-barrel, as shown in Fig. 2, in which the piston can be raised only a portion of the height, which is more convenient than raising it the whole height. In such construction, however, it is necessary to provide means for allowing the water to pass under the pis-

ton, as by enlarging a portion of the casing, as in Fig. 2, or by means of a passage *a*, as shown in Fig. 1 in dotted lines, with a collar *b* on the piston-rod to limit its upward movement.

The spirit of my invention consists, broadly, in providing a hydrant with suitable mechanical means for pumping out the water remaining in the casing after the water is shut off. This may be carried out in many different ways; but I prefer to make the casing, or a portion of the same, the pump-barrel itself.

A separate waste-pipe may be dispensed with altogether, as it is obvious that all the waste water may be pumped out through the ordinary discharge-opening if the piston can be raised high enough by making the piston-rod hollow to serve as a waste-passage.

What I claim is—

1. In a hydrant, the combination of the casing provided with a discharge-opening and a valve-controlled connection with the main or supply pipe, a waste pipe or passage from said casing at a point below the connection with the supply, and a piston in said casing provided with means for vertically reciprocating it in said casing, substantially as described.

2. In a hydrant, the combination, with the casing provided with lateral inlet and outlet connections, of a valve-seat in said casing below the inlet-connection, a waste pipe or passage from said casing at a point below said valve-seat, and a piston-valve adapted to be vertically reciprocated in said casing, or in the lower portion of said casing, and forming a valve for the valve-seat in said casing, substantially as described.

3. The combination, with a hydrant-casing having its supply-valve arranged in a lateral connection of said casing, of a piston in said casing normally held below the connection and adapted to operate in connection with the casing as a pump for the removal of the waste water, and a piston-rod to which said piston is secured, said piston-rod extending through the top of the casing and forming the means for reciprocating said piston in the casing, substantially as described.

4. The combination, with a hydrant-casing having its supply-valve arranged in a lateral connection of said casing, of a piston in said casing, a seat formed in the bottom of said casing, in which said piston is normally seated below the supply-valve and its connection with the casing, a waste-pipe connected to the casing below said seat, and a piston-rod extending through the top of the casing, substantially as described.

5. The combination, with the hydrant-casing having its supply-valve arranged in a lateral connection of said casing, of a piston in said casing, a seat formed in the bottom of said casing, in which said piston is normally seated below the supply-valve and its connection with the casing, a well below said seat

in the valve-casing, and a waste-pipe communicating with the bottom of said well, substantially as described.

5 6. The combination of the hydrant-casing and its piston arranged to operate in connection with said casing as a pump for the removal of the waste water, the valve-casing P, laterally connected to said casing and provided with the valve-seat Q and recess W, and the valve S, having its actuating mech-

anism arranged outside of the hydrant-casing, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 17th day of December, 1889.

JOHN F. LINGEMANN.

Witnesses:

P. M. HULBERT,
GEO. A. GREGG.